

NAIP Review

USDA Planning and Coordination Meeting

December 09 , 2009

NAIP

NAIP
2010



NAIP Review

- NAIP has always been about meeting USDA requirements at a low cost
 - 30 days after flying, etc.
 - Platform for doing new things
- ***But.....***
 - Image quality is important
 - Horizontal accuracy is important
 - Archival is important
 - Delivery is important
- ***And.....***
 - We want to know how it is working for you..

NAIP Review

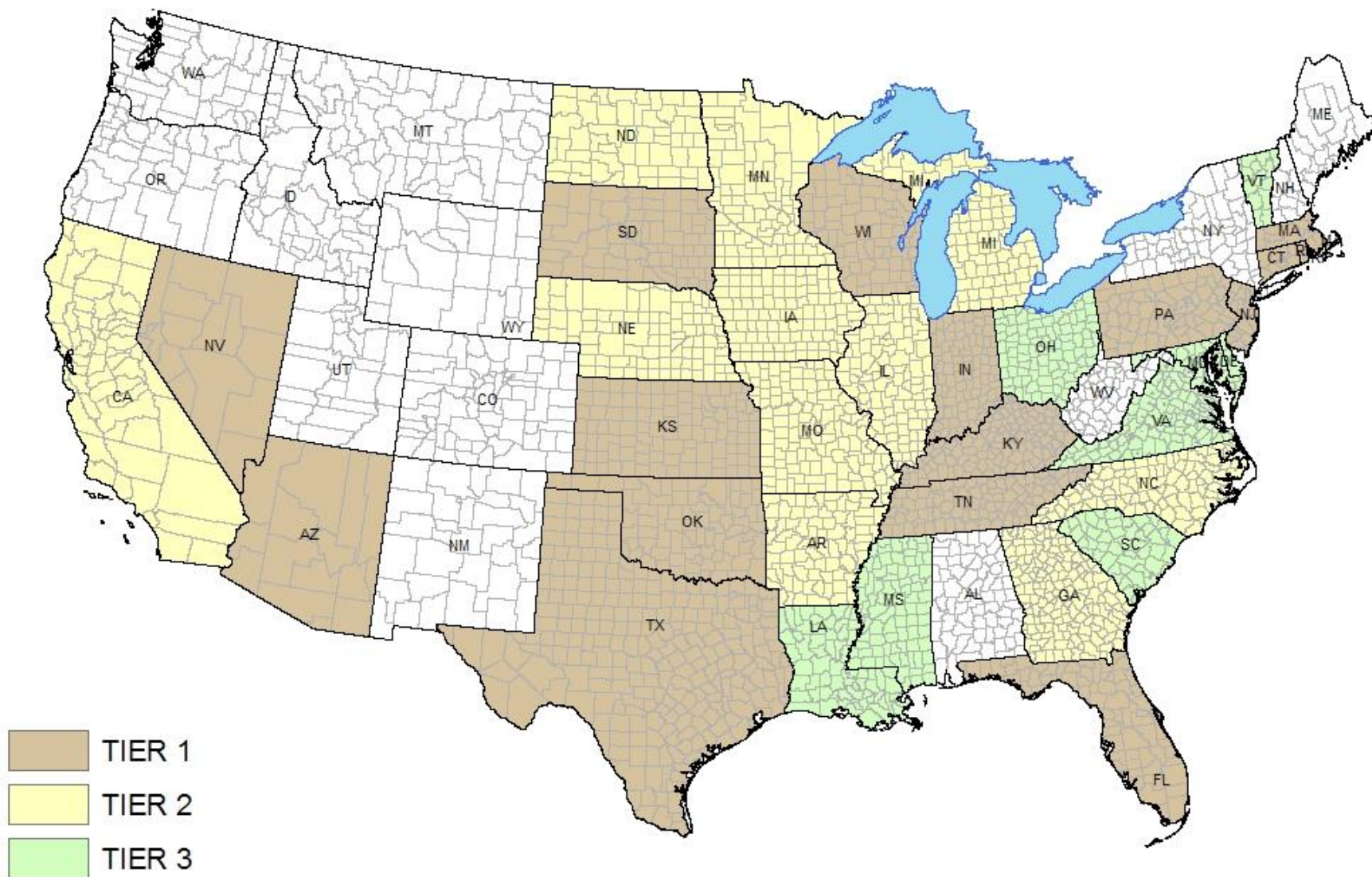
Presentation Topics

- 2010 Plans
 - Acquisition Plans
 - Cost Share Model
 - Spec/Program Changes
 - NAIP status web site
- Issues with Deliverables
 - Format
 - 4 band
 - Compression
- Feasibility Studies
 - Alternative deliverables
 - Hi res
- APFO Delivery Systems Update
- 2009 Secondary Contracts
 - Stereo – WY
 - .5 meter - OR
- Support
 - Problem Reporting/Tracking
 - NAIP Coverage web site

NAIP 2010 Acquisition Plans

- Tier 1
 - Based on 3 year cycle
 - \$10.8 M FSA
 - \$4.73 M fed partners
 - Fed partner commitment
 - Full state coverage
- Tier 2
 - Based on Additional funding to FSA
 - \$24 Million total FSA
- Tier 3
 - Based on “significant” cost share from state
 - FSA will cost share on case by case basis

2010 NAIP PROPOSED STATES



USDA Imagery Planning and Coordination
Meeting December 9, 2009

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Tier 1 States

Based on existing funding commitments by FSA and Federal partners

State	NAIP Cycle Date	NAIP Base Image Date	Full state coverage QQs	1 meter QQ base cost	Estimated Cost - Full State Coverage	4-band Buy-up Cost
AZ	2011	2007	7629	\$215	\$1,640,235.00	\$164,023.50
CT	2011	2008	413	\$215	\$88,795.00	\$8,879.50
FL	2011	2007	3954	\$215	\$850,110.00	\$85,011.00
IN	2011	2008	2,689	\$215	\$578,135.00	\$57,813.50
KS	2011	2008	5,901	\$215	\$1,268,715.00	\$126,871.50
KY	2011	2008	2930	\$215	\$629,950.00	\$62,995.00
MA	2011	2009	744	\$215	\$159,960.00	\$15,996.00
NJ	2011	2008	635	\$215	\$136,525.00	\$13,652.50
NV	2011	2006	7,341	\$215	\$1,578,315.00	\$157,831.50
OK	2011	2008	4,815	\$215	\$1,035,225.00	\$103,522.50
PA	2011	2008	3,343	\$215	\$718,745.00	\$71,874.50
RI	2011	2008	116	\$215	\$24,940.00	\$2,494.00
SD	2011	2008	5,992	\$215	\$1,288,280.00	\$128,828.00
TN	2011	2008	3,000	\$215	\$645,000.00	\$64,500.00
TX	2010	2008	17,277	\$215	\$3,714,555.00	\$371,455.50
WI	2011	2008	4,484	\$215	\$964,060.00	\$96,406.00

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Tier 2 States

Based on additional FSA funding

State	NAIP Cycle Date	NAIP Base Image Date	Full state coverage QQs	1 meter QQ base cost	Estimated Cost - Full State Coverage	4-band Buy-up Cost
AR	2009	2009	3,600	\$215	\$774,000.00	\$77,400.00
CA	2010	2009	11,094	\$215	\$2,385,210.00	\$238,521.00
GA	2009	2009	3,913	\$215	\$841,295.00	\$84,129.50
IA	2011	2009	4,238	\$215	\$911,170.00	\$91,117.00
IL	2010	2009	4,131	\$215	\$888,165.00	\$88,816.50
MI	2010	2009	4,844	\$215	\$1,041,460.00	\$104,146.00
MN	2011	2009	6,796	\$215	\$1,461,140.00	\$146,114.00
MO	2010	2009	5,018	\$215	\$1,078,870.00	\$107,887.00
NC	2010	2009	3,581	\$215	\$769,915.00	\$76,991.50
ND	2009	2009	5,712	\$215	\$1,228,080.00	\$122,808.00
NE	2010	2009	5,628	\$215	\$1,210,020.00	\$121,002.00

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Tier 3 States

Additional states that will be considered with *significant* cost share

State	NAIP Cycle Date	NAIP Base Image Date	Full state coverage QQs	1 meter QQ base cost	Estimated Cost - Full State Coverage	4-band Buy- up Cost
LA	2009	2009	3,283	\$215	\$705,845.00	\$70,584.50
MD	2009	2009	901	\$215	\$193,715.00	\$19,371.50
MS	2010	2009	3,237	\$215	\$695,955.00	\$69,595.50
OH	2009	2009	3,049	\$215	\$655,535.00	\$65,553.50
SC	2009	2009	2,151	\$215	\$462,465.00	\$46,246.50
VA	2010	2009	3,029	\$215	\$651,235.00	\$65,123.50
VT	2011	2009	812	\$215	\$174,580.00	\$17,458.00

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What stays the same

- Flying Seasons determined by FSA
- <10% cloud cover
- Deliverables available approximately 45 days after flying season
- Compressed County Mosaics (CCMS)
 - 3 band MG3 format
- Uncompressed Quarter Quads
 - GeoTIFF format
 - 3 band and 4 band
- Absolute Horizontal Accuracy Specification
 - 6 meters from “true ground” position

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Changes

- Adding “Inland lakes water quarter quads” to state coverage
- Quarter quads available sooner to partners
 - Approximately 45 to 60 days after flying season close
 - Pass automated QA check on file headers
 - Single delivery on portable hard disk drives
 - No partial delivery
- Dropping JPEG2000 format for now
 - Several unresolved issues
 - Web service planned for color infrared

2010 Partnership Strategy

- NAIP 2010 will be full state coverage
 - Federal cost share
 - Additional FSA funding
- Cost Share Partners can “Buy Up” to 4 band
 - 10% of total cost per state
 - This is a set, pre-determined amount that is based on estimated 2010 costs.
- Maximize Coverage

2010 Partnership Deliverables

- Compressed County Mosaics
 - 3 band MG3 format
 - Same as delivered to FSA state office specialists
 - Copy of DVD made by vendors
 - Shipped to partners after delivery from vendors
 - Quick visual inspection
- Quarter Quads
 - GeoTIFF format (3 band and 4 band)
 - Sent to partners after entire state delivered from vendors
 - After QA is complete, any new versions are sent out to partners.

NAIP 2010

Support

- Partnership Information/Agreements
 - NAIP Partnership Coordinator
Bridget Barlow 801-844-2911
Bridget.Barlow@slc.usda.gov
- Problem/Issue Reporting
 - Quality Assurance Branch Chief
Brenda Simpson - 801-844-2960
Brenda.I.simpson@slc.usda.gov
- NAIP Technical Support
 - Geospatial Services Branch
Brian Vanderbilt – 801-844-2930
Brian.vanderbilt@slc.usda.gov
- NAIP Project Status
 - <http://gis.apfo.usda.gov/naipstatus09/>
- APFO Web site
 - <http://www.apfo.usda.gov>
 - Support Documents/NAIP Partnership page
<http://www.fsa.usda.gov/FSA/apfoapp?area=home&subject=docs&topic=nai>



NAIP Acquisition and Delivery Schedule

Example: Virginia

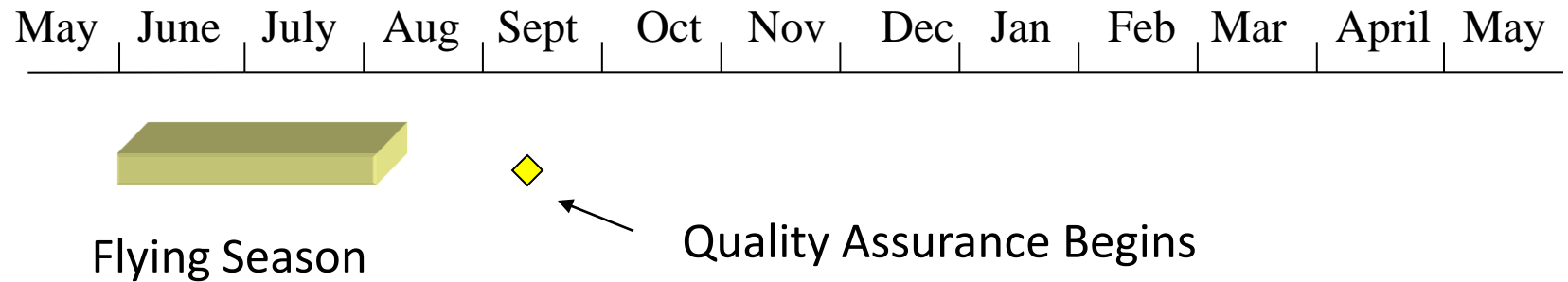
May | June | July | Aug | Sept | Oct | Nov | Dec | Jan | Feb | Mar | April | May



Flying Season

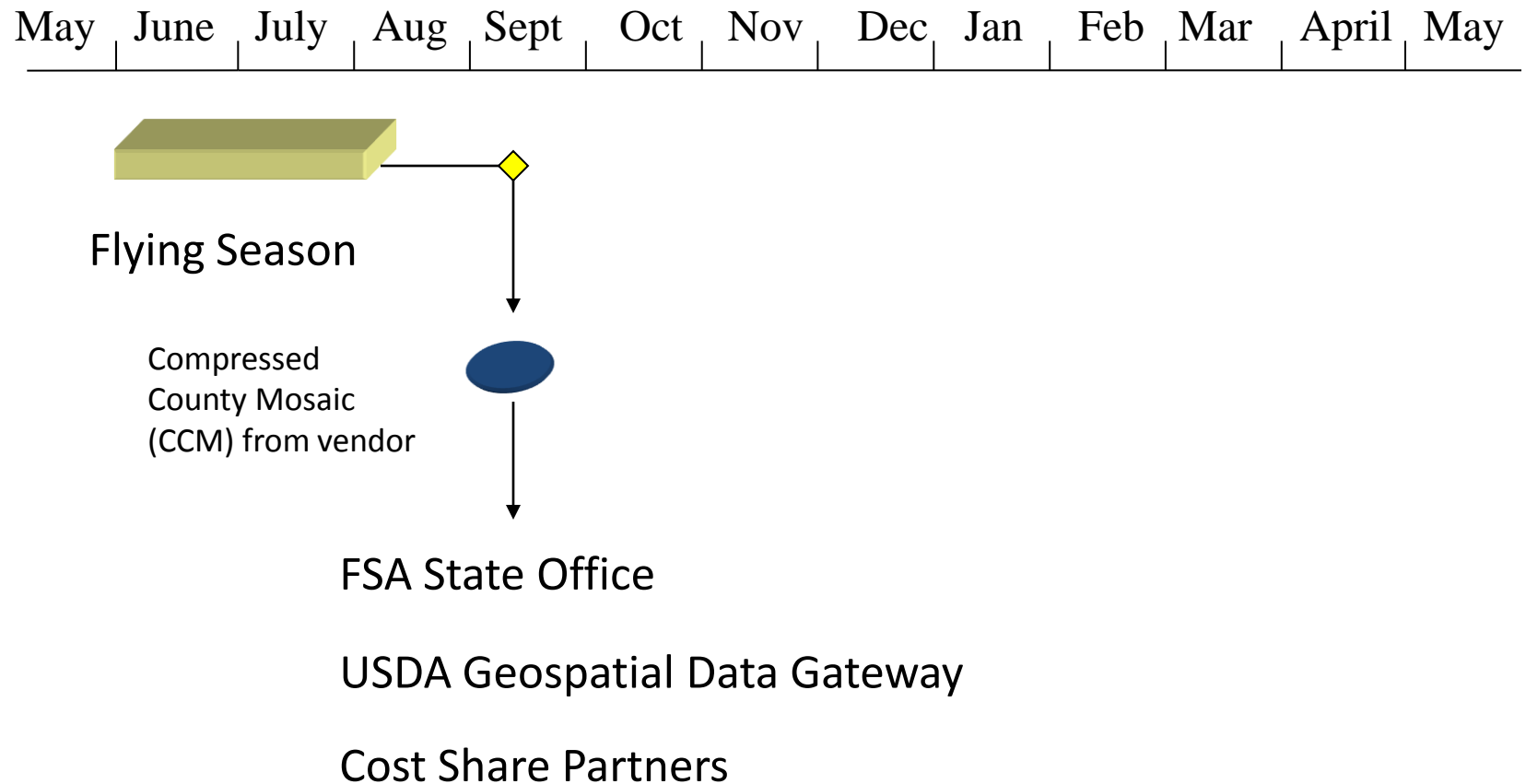
NAIP Acquisition and Delivery Schedule

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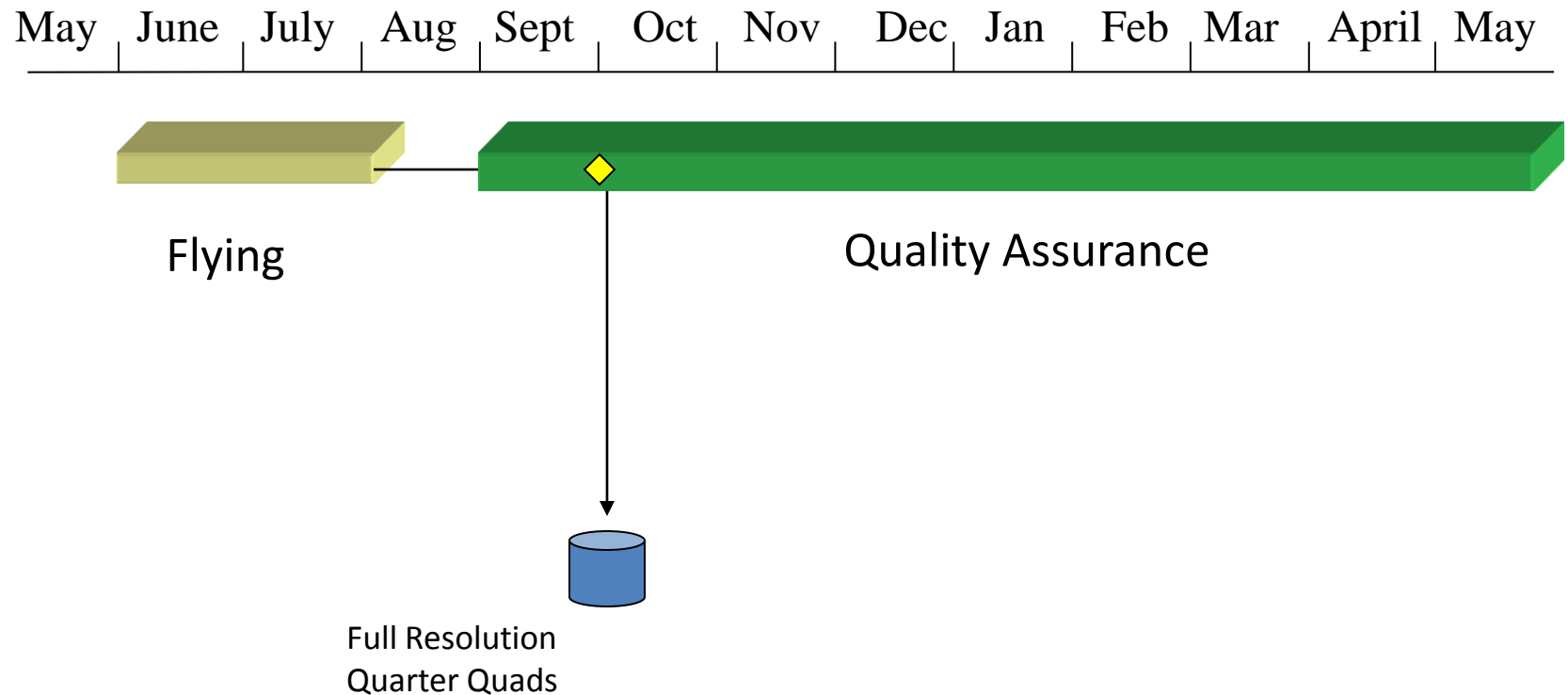
NAIP Acquisition and Delivery Schedule

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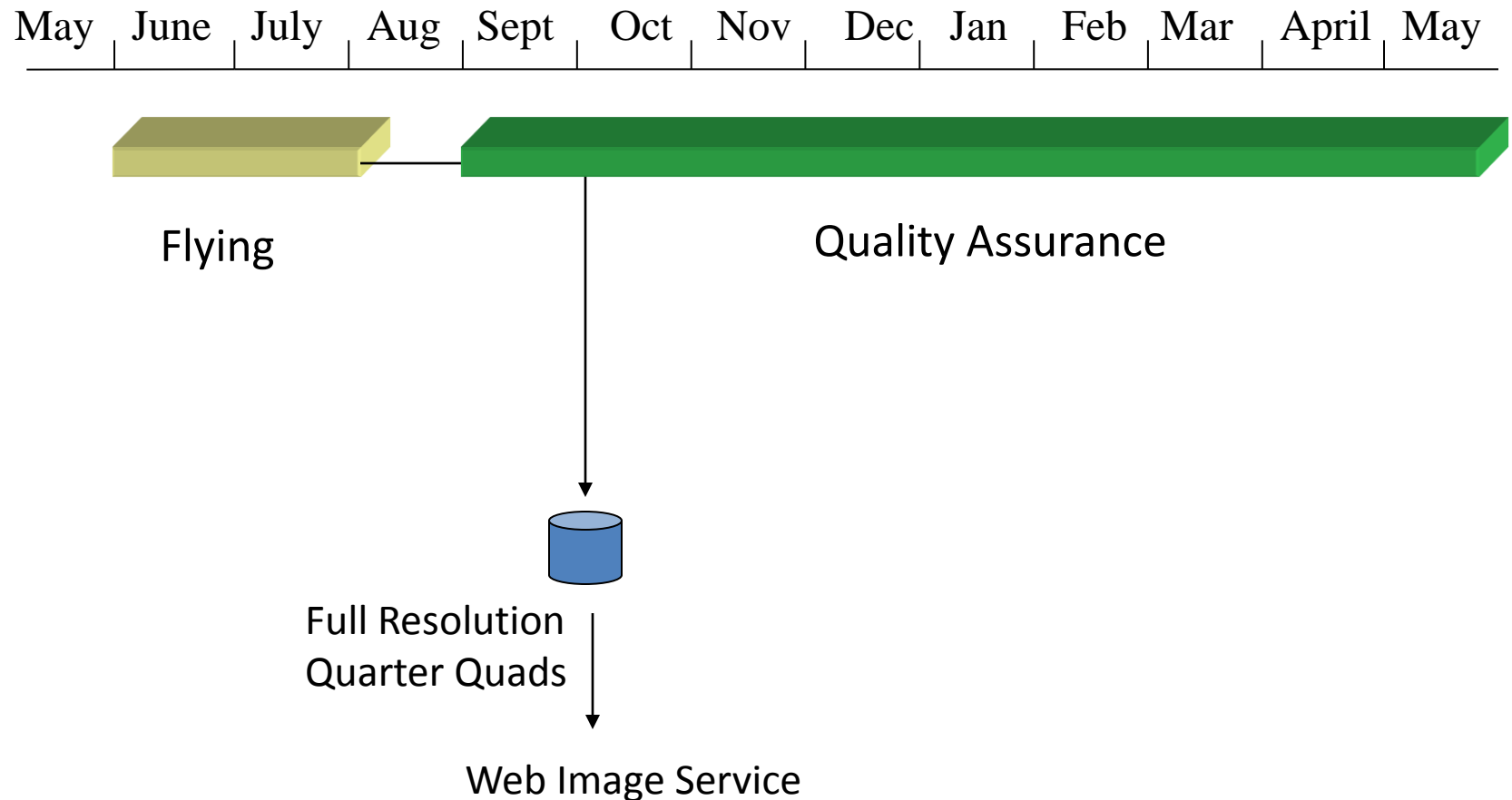
NAIP Acquisition and Delivery Schedule

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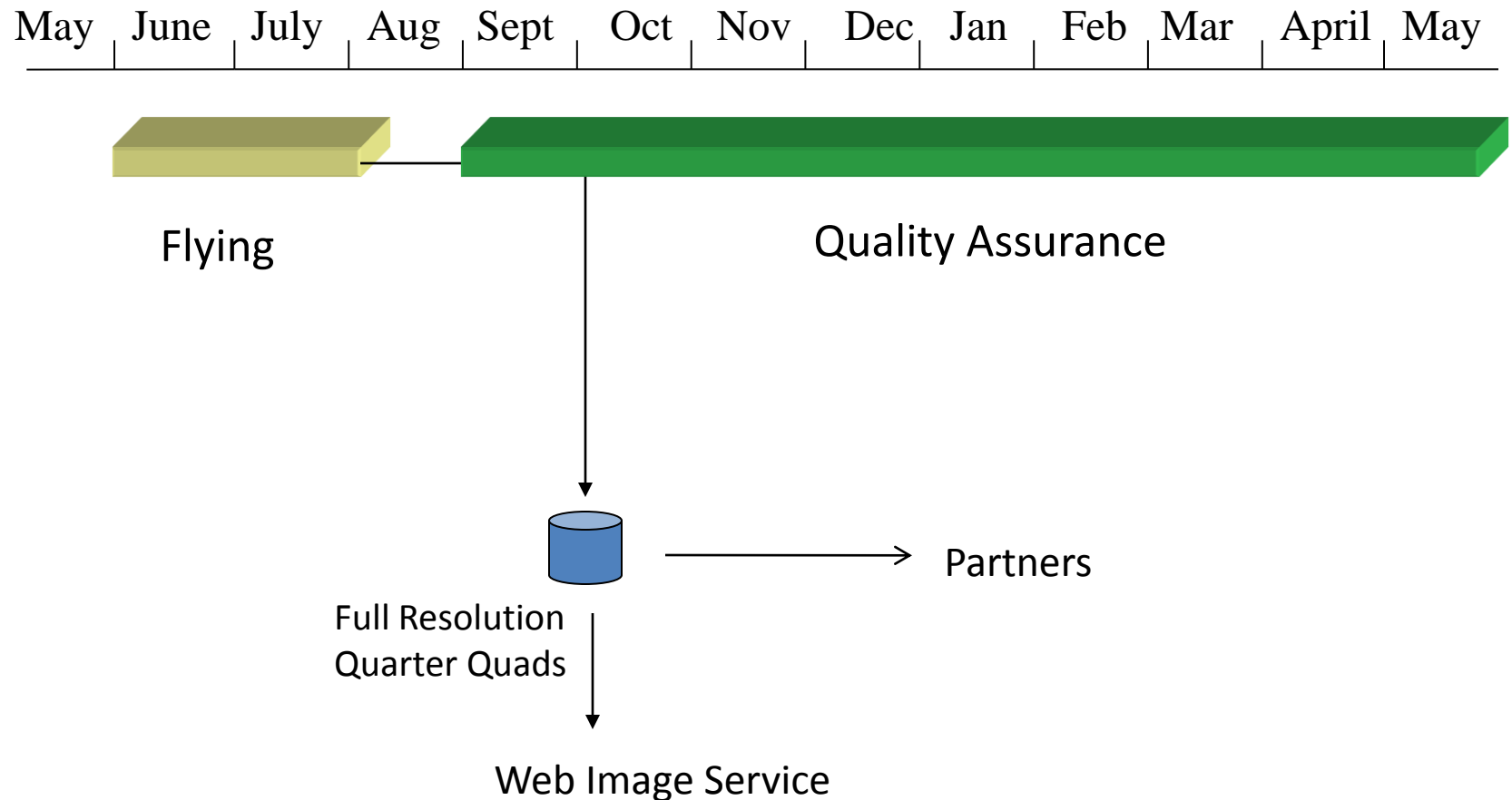
NAIP Acquisition and Delivery Schedule

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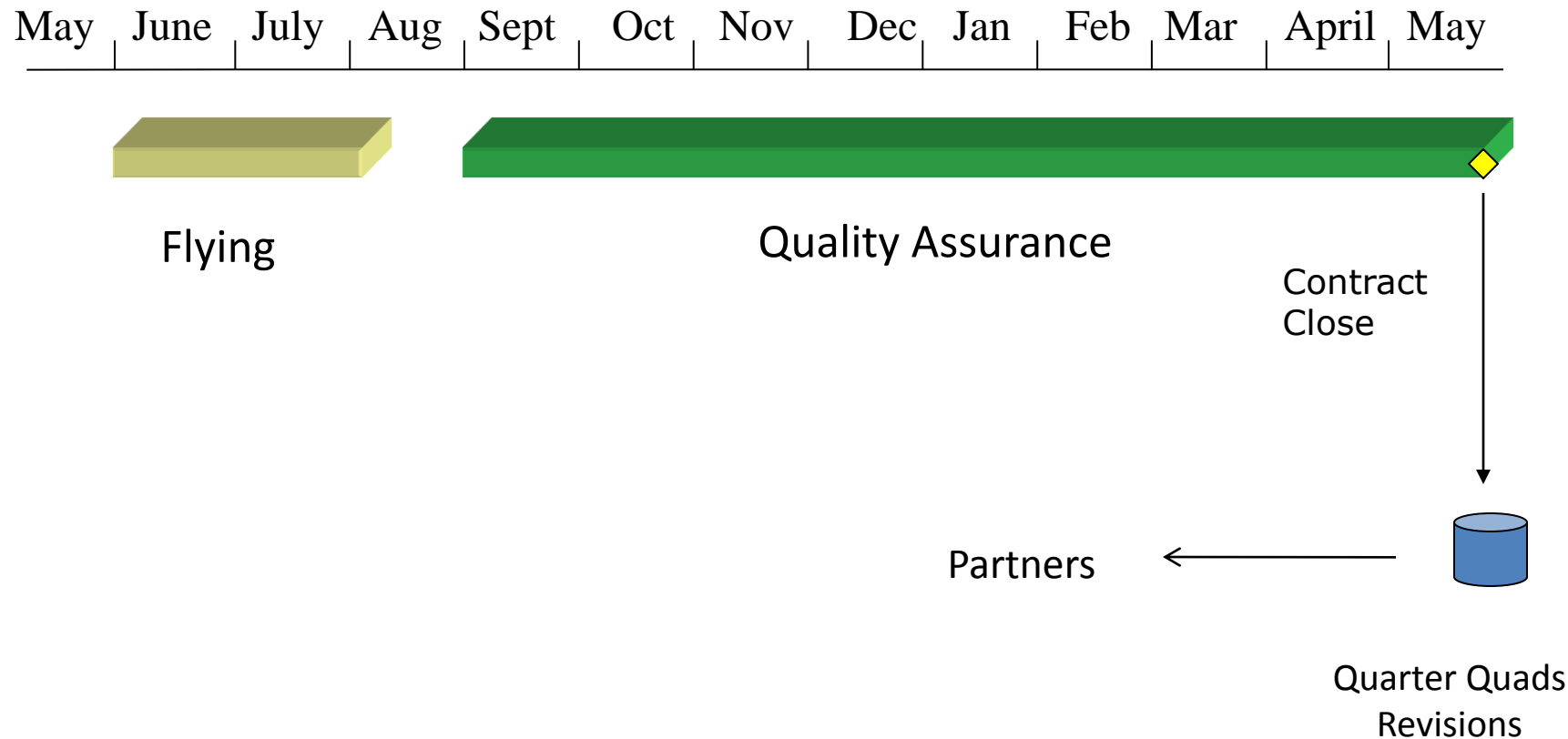
NAIP Acquisition and Delivery Schedule

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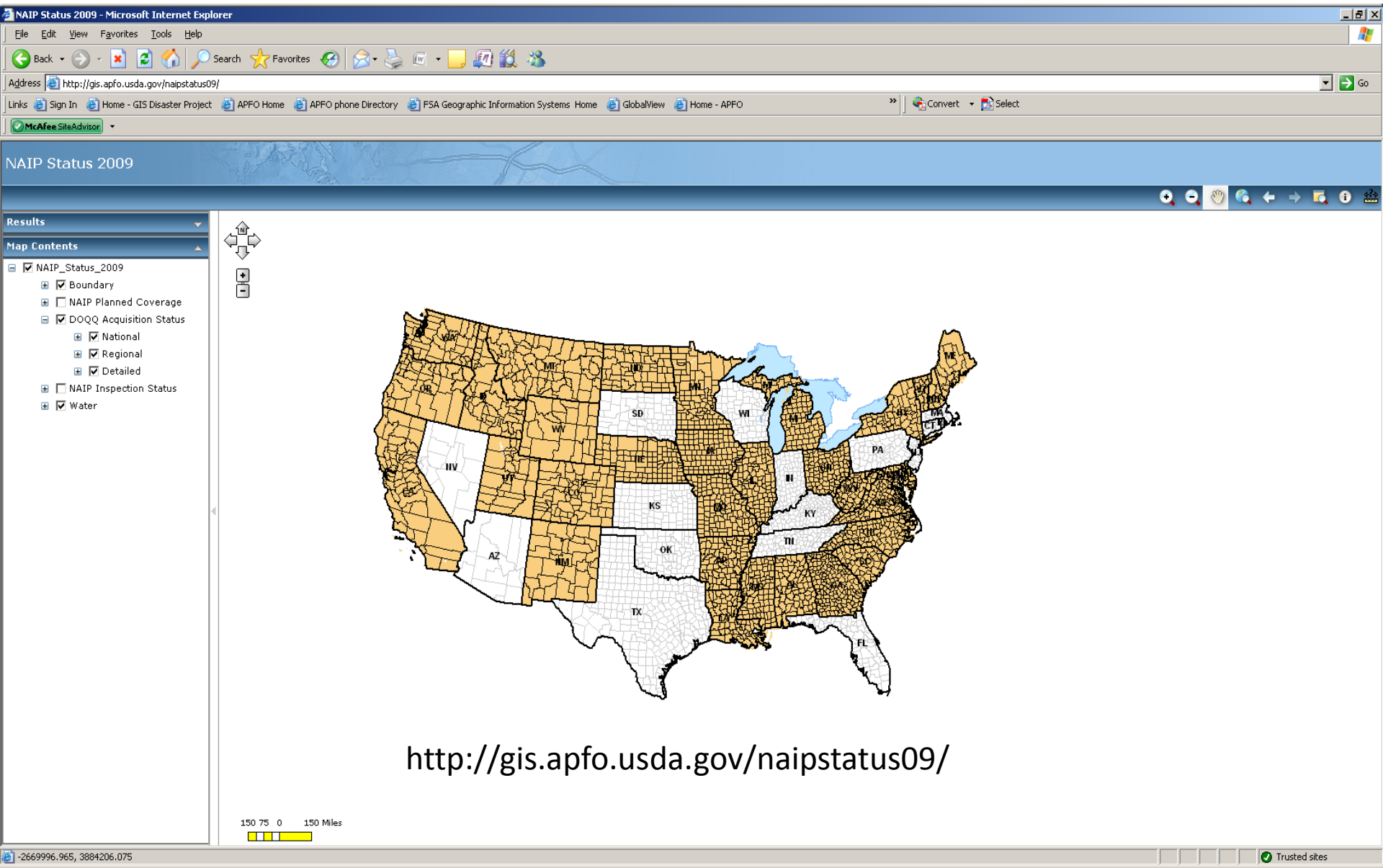
NAIP Acquisition and Delivery Schedule

Example: Virginia



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NAIP Project Status Web Site



Issues with Deliverables & Feasibility Studies

David Davis

**USDA Farm Service Agency
Aerial Photography Field Office**

4-Band NAIP Compression

- 4-band DOQQ & CCM (Preferred)
 - GeoTIFF Supports 3 or 4-band
 - ECW Proprietary, long term support?
 - JP2 GIS compatibility, image quality issues
 - MG4 Not yet available for imagery
- 4-band DOQQ, 3-band CCM (Current)
 - 4-band, GeoTIFF DOQQ
 - 3-band, MG3 CCM

4-Band NAIP Compression

- Possible options for 4-band or CIR
 - 3-band RGB and 3-band CIR CCMs
 - Web services that provide 4-band and/or CIR
 - 4-band JP2 or ECW secondary contract
- Comments, questions, concerns?
- Are the current deliverables (4-band DOQQ & 3-band ccm) meeting the needs of NAIP users?

CCM Alternative

- CCM pros & cons
 - One image rather than hundreds of DOQQs
 - Color balanced
 - Easy to provide from Gateway
 - Easy to use, especially for novices
 - Some only want small area, not entire county
 - Large counties, very large file size
 - 4-band, high resolution, even larger file size
 - Fit on CD or DVD?
 - Too large for delivery from the Gateway

CCM Alternative

- Possible option
 - Compressed DOQQ (CDQ ?)
 - Two products, one basic unit
 - Uncompressed & compressed DOQQs
 - Raster catalog for county, forest, or other area of interest
 - End user may only “see” one file (catalog file of AOI)
 - Color balanced
 - Easy to provide from Gateway
 - Single CDQ, custom AOI, or premade county, forest, other areas
 - Easy to use, especially for novices

CCM Alternative

- Continued
 - Large counties, tiles rather than a large, single file
 - 4-band, high resolution, easier to manage than CCM
 - Fit on CD or DVD
 - Able to deliver from the Gateway unlike some CCMs
 - Less desktop & server space needed
 - No overlapping imagery needed with adjacent CCMs
 - No, no-data area around image as with CCMs
 - Able to download smaller AOI, not entire county
- Would this meet the needs of NAIP users?
- Comments, questions, concerns?
- Possible pilot project?

High Resolution Feasibility

- Technology and customer requests for Hi-Res
- Higher resolution NAIP ($\frac{1}{2}$ -m GSD)
- Reviewed 2-ft, $\frac{1}{2}$ -m, 1-ft, $\frac{1}{4}$ -m
- File size and hardware requirements
- Cost –acquire, serve, store, archive, applications, ...
- Delivery schedule –more flights, more images, ...
- Web applications
- Inspection –GCPs, refresh rate, products
- Sales and distribution –cost, media, gateway, standards, metadata, contract, storage, formats, compression ratio, partner requirements, ...

High Resolution Feasibility

2009 NAIP Coverage File Size Estimate (1-meter, 3-band)

-DOQQs 20 TB (148146 DOQQs X 135 MB)
-CCMs 1.3 TB (DOQQs file size with compression ratio 15:1)
Total **20 TB**

2009 NAIP Coverage File Size Estimate (1-meter, 4-band)

-DOQQs 26.7 TB (148146 DOQQs X 180 MB)
-CCMs 1.8 TB (DOQQs file size with compression ratio 15:1)
Total **28.4 TB**

2009 NAIP Coverage File Size Estimate (½-meter, 3-band)

-DOQQs 91.9 TB (148146 DOQQs X 620 MB)
-CCMs 6.1 TB (DOQQs file size with compression ratio 15:1)
Total **98 TB**

2009 NAIP Coverage File Size Estimate (½-meter, 4-band)

-DOQQs 122.2 TB (148146 DOQQs X 825 MB)
-CCMs 8.2 TB (DOQQs file size with compression ratio 15:1)
Total **130.4 TB**

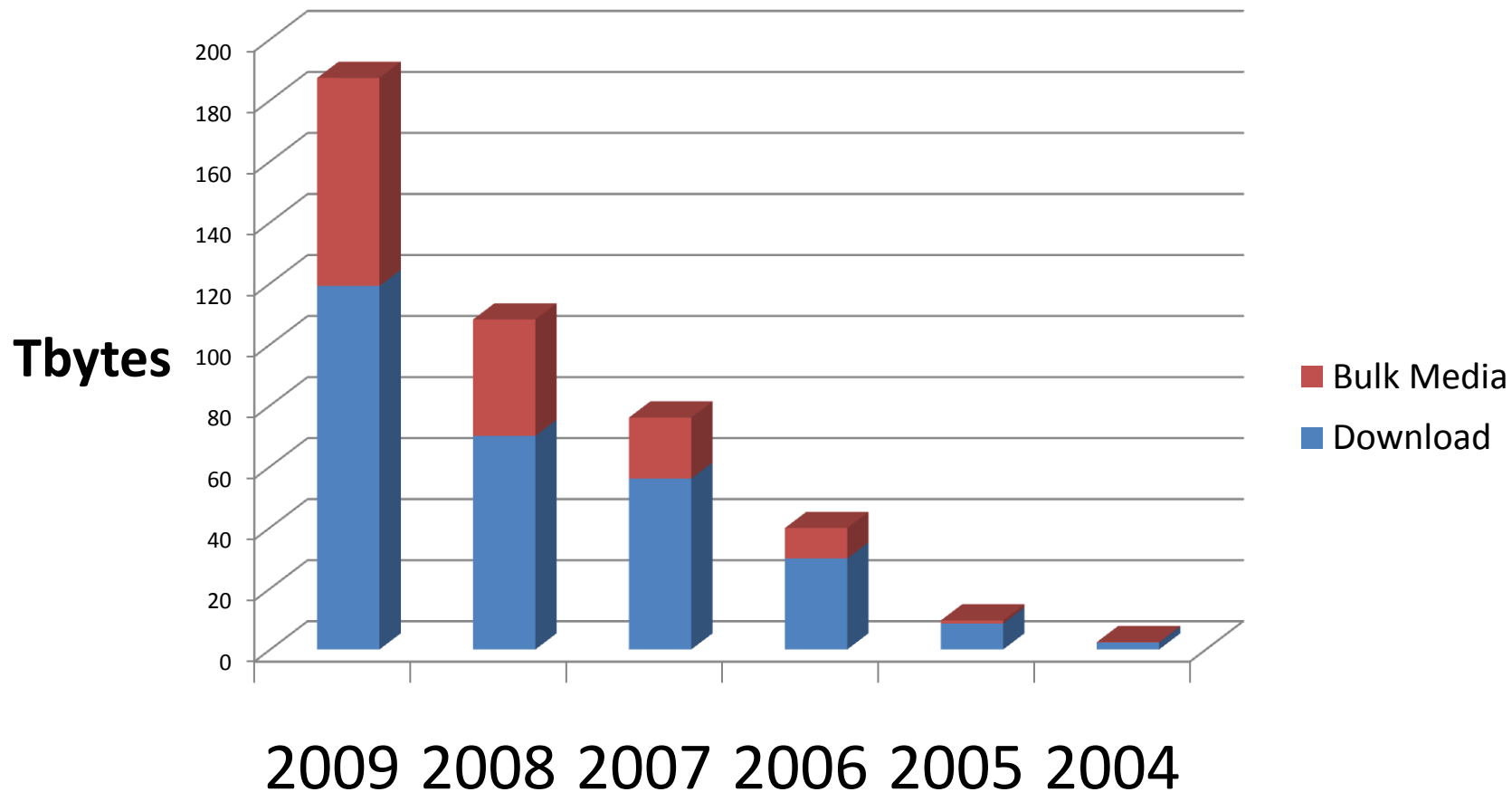
High Resolution Feasibility

- Possible pilot project of one or more states
 - Hardware buildup
 - Web applications preparations
 - Impact on FSA national, state, and counties
 - Impact on NAIP partners
-
- Would this meet the needs of NAIP users?
 - Comments, questions, concerns?

Sensors

- Do any agencies require film?
- Agency requirements for multiple bands
 - 4 to 8-bands
- Vendor or agency plans or experience with new or upcoming sensors

NAIP Distribution Totals



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Better Get Ready!

